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A TRIP
THROUGH
TURNER VALLEY



With
THE YOUNG MEN'S SECTION
OF THE
CALGARY BOARD OF TRADE

SEPTEMBER 12TH, 1929

Calgary Board of Trade

YOUNG MEN'S SECTION

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The Oilfields of the Empire

In the foothills of the Rockies, thirty-five miles southwest of Calgary, lies one of the greatest potential oilfields of the world,—TURNER VALLEY. As now mapped the field is fifteen miles long and from one to one and a half miles wide. On the 10,000-acre area, there are twenty-eight producing wells and seventy more that are being drilled night and day down to Nature's vast stores of liquid gold. Millions of dollars have already been expended in development and many millions more will have been spent before drilling programmes now being carried out are completed.

On the west and south sides of Turner Valley there are a number of other oil structures which are at present being developed. About three miles west of the central portion of Turner Valley, wells are drilling on the New Black Diamond structure. North and west of the New Black Diamond structure and six miles west of Turner Valley a number of companies are testing the Waite Valley structure, while west and south of the lower end of Turner Valley drilling is under way on the Highwood structure.

HISTORICAL.

Drilling was first started in Turner Valley in 1912 when a group of Calgary men decided to sink a test well in the vicinity of oil and gas seepages close to Sheep Creek. In May, 1914, Discovery No. 1 well, now Royalite No. 1, blew into production with 35 barrels a day. The flow soon settled down to an average of from 10 to 15 barrels a day, but the strike was responsible for the wildest boom in the history of Alberta.

After the inevitable collapse of the boom comparatively little interest was taken in the field until October 24, 1924, when Royalite No. 4 blew into production with a gas flow of 21,500,000 cubic feet a day. The well "ran wild" for several weeks and the derrick was burned down before Royalite No. 4 was brought under control. It is nearly five years now since the Royalite Oil Co. started to take production from the well. The average daily production has been 500 barrels and the total value of the crude naptha since that memorable day is more than \$4,000,000.

Last fall the north end of the field came into prominence when Foothills No. 1 struck a flow of 65 barrels of light crude oil a day. This flow has increased steadily and the well is now producing more than 115 barrels a day.

In November last year Okalta No. 1, located in the central portion of the field, was brought into big production. For some time the well ran wild but when harnessed it yielded 600 barrels of light crude oil a day. Its present production is from 400 to 450 barrels at a time of year when no Turner Valley well is at its best because of difficulties in obtaining complete recovery.

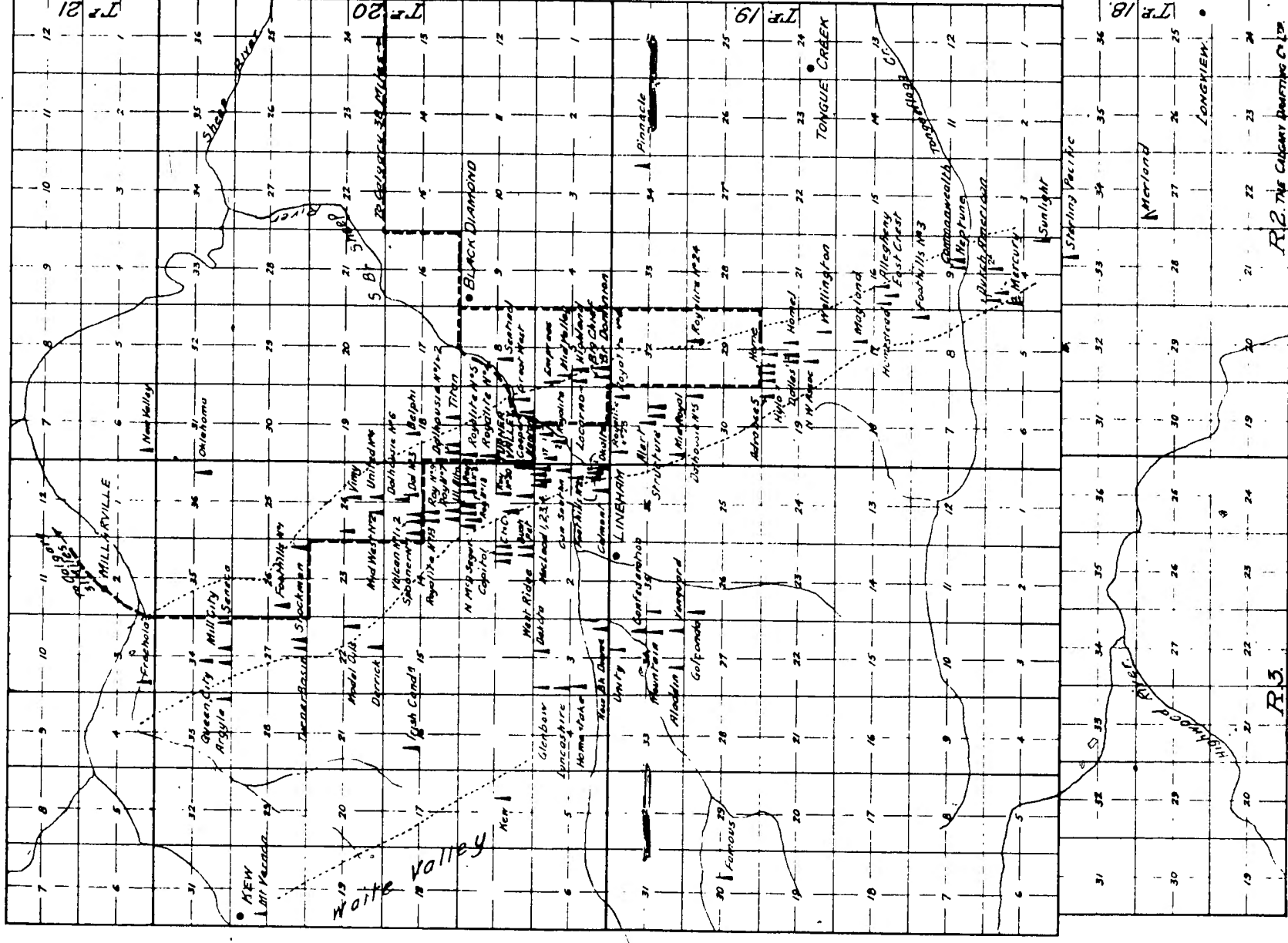
Early in the present year, the proven area of the field was extended another four miles when Home No. 1 blew into production with a yield of 800 barrels of crude naptha a day. Home No. 2 followed in June with 500 barrels a day and less than a month ago Home No. 3 struck a flow estimated to be equal to that of No. 1, the largest well in the field.

DRILLING EQUIPMENT

Three types of drilling equipment are used in Turner Valley, standard or cable tools, rotary drills and diamond drills. Standard tools drill by pounding much like a pile driver with the bit smashing and grinding downward with every blow. The debris, mixed in water, is removed by bailing. The walls of the hole are lined with steel casing which is placed in the hole at various intervals, one string of casing inside another until the well is completed at which time there are five or six different sizes of casing in the hole. In the event of caving the casing may be lowered behind the drill bit and carried with the bit until it becomes expedient to set the pipe.

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TURNER VALLEY OIL FIELD.



Rotary drills make footage by constant turning of a bit on a jointed stem. A clay mud, kept in constant circulation, removes the debris from the hole. Casing is set near the surface and from that point open hole is usually drilled until the production horizon has been reached. Caving is prevented when it occurs by placing concrete in the hole and drilling out the cement when it has set.

Wells may be completed with either standard or rotary equipment but it is becoming a common practice to switch to the diamond drill when the limestone has been reached. The diamond drill is also rotary in its action. It is equipped with a diamond-studded bit to drill through extremely hard formation.

THE FORMATIONS.

A series of structural formations occur in Turner Valley which are similar in all parts of the field. These are regarded as markers as they indicate the probable depth to big production, now obtained from a porous limestone formation. Wells are usually started on a formation known as the Bentons which are from 2,000 to 2,500 feet in thickness and divided into Upper and Lower by the Cardium sands. For the next 600 to 700 feet the drill must pass through the Dakota or Blairmore formation which contains the McDougall-Segur sands from which production is frequently obtained. Then follows the Kootenay formation, about 300 feet thick, at the bottom of which occur the Home Sands, another possible production horizon. The Kootenay coal seam is also encountered at this depth.

The next formation is known as the Fernies and is from 550 to 600 feet in thickness. It contains the Dalhousie sands, an oil bearing stratum of about 100 feet in depth. The last and most interesting formation is commonly called "the lime." Here the bit must cut for from 100 feet to an unknown depth to encounter big production. The big wells of the field are all producing from the limestone. Home wells at from 120 to 175 feet in the lime and Royalite No. 4 from 310 feet in the lime.

A PREMIUM ON PRODUCTION.

Production is obtained from "wet" gas, a gas that is saturated with crude naphtha or light crude oil. In this respect Turner Valley is unique among oil-fields of America in that other fields produce a much lower grade of oil. The Turner Valley product can be used successfully in gasoline engines without refining and for this reason, although it passes through a refining process before retailed, it commands a much higher price than the petroleum product of other fields.

The wet gas blows from the wells at great pressure and is passed through "separators" where the crude naphtha or light crude is removed and placed on a pipe line through which it is carried to refineries at Calgary. The gas, except for a small portion which is cleaned at the Royalite scrubbing plant for use in Calgary, is liberated into the atmosphere and burned to avoid explosions and asphyxiation of the men in the field.

PRODUCTION AND POSSIBILITIES.

In 1928, the total petroleum production of Alberta was 488,268 barrels or 77.1 per cent. of the total production for the Dominion. Deliveries from Turner Valley wells during the first eight months of this year amounted to 575,075 barrels, thus exceeding by nearly 100,000 barrels the total for the entire Province last year. Last year's petroleum production for Alberta was valued at \$2,000,000. During the same period, petroleum products valued at \$62,000,000 were imported into the Dominion.

While more than 1,400 men are employed in Turner Valley with an annual payroll of over \$3,000,000, and while more than \$10,000,000 will be spent on the wells now drilling, there are opportunities for greater development. If only one well was drilled on every ten acres in the field, one thousand wells could be sunk. At an average cost of \$125,000, the cost of such a programme would be \$125,000,000 and annual return, on the basis of present average production, would exceed \$150,000,000.

BECAUSE OF THE FIRE AND EXPLOSION HAZARD YOU ARE REQUESTED TO REFRAIN FROM SMOKING WHILE IN THE OILFIELD.

Daily Production of Turner Valley Wells

Well	Amount	Depth
Dalhousie No. 1 (100 N)	4,565	
Dalhousie No. 5 (45 L.C.)	4,900	
Dalhousie No. 6 (14 N)	5,893	
Foothills No. 1 (114 L.C.)	5,915	
Foothills No. 2 (80 L.C.)	4,720	
Home No. 1 (800 N)	5,280	
Home No. 2 (600 N)	5,507	
Home No. 3 (800 N. & L.C.)	5,127	
Illinois-Alberta No. 1 (57N)	3,858	
McDougall-Segur No. 2 (68N)	5,373	
McLeod No. 2 (12N)	4,420	
McLeod No. 3 (60 N)	3,930	
McLeod No. 4 (68 N)	5,185	
Okalta No. 1 (325 L.C.)	5,040	
Regent No. 1 (67 N)	3,905	
Royalite No. 4 (450 N)	3,650	
Royalite No. 7 (80 N)	4,208	
Royalite No. 8 (170 N)	3,753	
Royalite No. 9 (20 N)	5,593	
Royalite No. 13 (4 N)	4,944	
Royalite No. 14 (14 N)	3,656	
Royalite No. 15 (5 L.C.)	3,047	
Royalite No. 17 (203)	4,034	
Royalite No. 18 (123 N)	3,885	
Royalite No. 20 (8 L.C.)	4,212	
Spooner No. 1 (68 N)	5,265	
United (20 L.C.)	5,385	
Vulcan (11 L.C.)	5,004	

(NOTE.—N and L.C. denote Crude Naphtha and Light Crude Oil respectively)

Drilling in Turner Valley

	Depth
Advance No. 5	3,451
A. P. Con. No. 1	3,060
A. P. Con. No. 2	2,400
Anaconda	150
Associated	5,410
Baltac	3,205
British Dominion	4,975
Calmont No. 1	5,567
Calmont No. 2	3,909
Calmont No. 3	150
Calmont No. 4	3,509
Calmont No. 5	3,130
Calmont No. 6	3,205
Calmont No. 9	4,930
Commonwealth	3,250
Daffin	1,450
Dalhousie No. 7	3,228
Dome	3,675
East Crest No. 1	4,233
East Crest No. 2	1,700
Foothills 5 (S.W. Pete)	5,189
Foothills No. 4	4,235
Freehold No. 1	3,450
Freehold No. 2	3,600
Great West	5,405

(NOTE.—Depths given are of Sept. 5, 1929).

	Depth
Hargal	1,545
Home No. 4	5,061
Home No. 5	1,929
Homestead	3,470
Hylo	1,600
Illinois-Alberta	3,675
Invader	2,050
Lowery Pete	2,640
Mayland No. 1	5,463
Mayland No. 2	2,302
Mayland No. 3	2,311
McLeod No. 1	3,930
McLeod No. 4	5,212
McLeod No. 5	100
McDougall-Segur No. 3	3,370
Mercury No. 1	3,040
Mercury No. 2	1,590
Merland	2,600
Midfield	2,650
Mid Royal	400
Miracle	2,990
Model	
Okalta No. 2	3,500
Okalta No. 3	2,500
Okalta No. 4	1,050
Okalta No. 5	550
Regent No. 2	2,050
Regent No. 3	1,810
Royalite No. 6	4,531
Royalite No. 12	5,222
Royalite No. 16	5,060
Royalite No. 19	4,623
Royalite No. 21	4,436
Royalite No. 23	4,551
Sentinel	5,050
Sioux City	2,150
Spooner No. 2	5,990
Spray	1,310
Structure	1,600
Sterling Pacific	3,574
Sunlight	2,960
United No. 4	4,450
Turner Basin	2,100
Vimy	2,350
Vanalta	450
Vulcan No. 1	5,010
Wellington	3,780
Widney	2,998

New Black Diamond

	Depth
Outwest Pete	3,010
New Black Diamond	2,300

Waite Valley

	Depth
Brock	250
Richfield	2,200
Innerfold	950
Angus	475
Gibraltar	530